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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/543,185	03/23/2006	Norio Murase	080188	5492

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EXAMINER	
HOBAN, MATTHEW E	
ART UNIT	PAPER NUMBER
1793	

MAIL DATE	DELIVERY MODE
03/16/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/543,185	MURASE ET AL.	
	Examiner	Art Unit	
	Matthew E. Hoban	1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 February 2010*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4,6,7 and 10-17* is/are pending in the application.

4a) Of the above claim(s) *1-4 and 10-12* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *6,7 and 13-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 6, 13 and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barney in 2002/0110180.

Regarding Claims 6: Barney teaches a temperature sensing composition that includes a matrix composition and semiconductor nanocrystals exhibiting fluorescence. It is stated that the quantum efficiency of the nanocrystals used can be greater than 20% and even greater than 80%. (See Paragraph 18). Barney goes on to state that the matrix in which the semiconductor nanocrystals are disposed can be an inorganic matrix such as a sol-gel derived matrix. (See paragraph 30). Barney then gives suitable precursors for such a matrix including hydrolysable compositions including silicon alkoxide ($Si(OR)_4$) (See Paragraph 32). Thereafter, Barney teaches silicon alkoxides, which read on the claim, since X is defined as simply being an alkoxy group. The term organoalkoxysilane is not explicitly defined in the specification. A suggested interpretation included in the specification denotes the organoalkoxysilane as having a carbon atom interacting with at least one of the 4 Silicon bonds; however, this definition is not made explicit. The interpretation of an organoalkoxysilane as simply TEOS, or any generic alkoxy silane is justifiable in that an organic molecule is only defined generally as including Carbon, which all alkoxysilanes have as a function of their formula.

Regarding Claim 13: Barney teaches that the matrix-semiconductor composite can be excited using a 480 nm wavelength excitor. Therefore the light emitting device

system of Barney includes the matrix-nanocrystal composite, as well as a 480 nm source light. It can also further include a photomultiplier.

Regarding Claim 15: The composite is of the same chemical structure as that of the claimed subject matter. It would necessarily follow that the hardness of the structure would be the same as that which is claimed. Composites of the same structure and chemical identity must necessarily have the same properties without convincing evidence to the contrary. See MPEP 2112.01.

Regarding Claim 16-17: Barney teaches the suitability of II-VI semiconductors. Teachings include specific examples pertaining to CdSe, although CdTe is also shown to be a suitable quantum dot semiconductor for use in their endeavors.

5. Claims 7 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barney in 2002/0110180 as applied to claim 7 above, and further in view ofSelvan in "Synthesis of tunable, highly luminescent QD-glasses through sol-gel processing"

Barney teaches glasses containing nanoparticles of semiconductors, which exhibit luminescence based on the temperature of the medium. Barney teaches several types of materials useful in this endeavor including alkoxysilanes. Barney is silent as to exact silanes useful for making such glasses.

However, QD-glasses having similar construction are known in the prior art. Selvan teaches glasses having luminescence, where these glasses are also made using alkoxysilanes. Specific silanes useful for making such glasses as taught by Selvan include TMOS, tetramethyoxylsilane, which is a silane having a methoxy group in the X position. No other limitation as to X is given in the instant claims other than it must include certain alkoxy groups.

Barney is also silent as to the concentration of QD semiconductors used in the glass of his teachings.

However, Selvan also teaches suitable concentrations in similar QD-glasses. Selvan shows QD concentrations up to .1 vol%, which converts to 1E-5 mol/l of semiconductor nanoparticles based on the average particle size of Barney's glass (7 nm).

Where Barney is silent to certain key considerations in making a product, one of ordinary skill in the art would turn to similar references in order to determine certain parameters which may be considered common knowledge. Selvan is such a reference, where it teaches suitable sol-gel precursors and compatible concentrations of semiconductor particles in order to make a functional glass. The references are highly compatible in that both teach QD glasses using similar materials.

Response to Arguments

Applicant's arguments, see pages 2-3, filed 2/23/2010, with respect to the Petruska Reference have been fully considered and are persuasive. The final rejection of the claims over Barney over Petruska has been withdrawn.

6. Applicant's arguments with respect to claims 6-7 and 13-17 have been considered but are moot in view of the new ground(s) of rejection. The perfection of priority is noted, which eliminates the Petruska reference from the available prior art. Upon review of the claimed subject matter, it was noted that an explicit definition of organoalkoxysilane is never delineated. Thereafter, the Barney reference has been reintroduced. Barney teaches the use of alkoxysilanes, which are organic in that they include carbon atoms. If applicant seeks to definitively include this definition in the claim, it should appear in a supported manner, as the term organoalkoxysilane has not been redefined by applicant. These silanes meet all conditions of the claims. In terms of the arguments previously against Barney alone, Barney contemplates the incorporation of the semiconductor particles into the matrix using coatings as seen in for example Paragraphs 30 and 31. All other previous arguments to Barney have been replied to or do not actually refer to the embodiments of Barney used to formulate the rejection. The applicant points several times to the specification in order to define patentable subject matter. If such features patentably distinguish the instant invention over the prior art, their positive inclusion in the claim language would be beneficial.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew E. Hoban whose telephone number is (571) 270-3585. The examiner can normally be reached on Monday - Friday from 7:30 AM to 5 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo can be reached on (571) 272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/C. Melissa Koslow/
Primary Examiner, Art Unit 1793

/Matthew E Hoban/
Examiner, Art Unit 1793